

**D -DAFO (DeRoss-Dynamic Ankle Foot Orthosis)****BACKGROUND OF THE INVENTION****1. Field of the Invention**

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[1] The present invention relates to the DeRoos-Dynamic Ankle Foot Orthosis, designed to maintain the correct alignment of the bones in the foot and ankle to a subtalar neutral position and or improved alignment for function by utilizing a support system of dynamic nature. This dynamic design is of particular benefit to children having spasticity, a condition often scene in cerebral palsy and similar types of medical disorders. The patients are generally confronted with a muscle imbalance, as their muscles do not work together as normal children's do. Their spasticity makes their muscles overpower other muscles creating unwanted pulls or forces on their joints. This imbalance of muscular pulls, called spastic contractures, creates misalignment of the involved joints, and if this misalignment is not corrected, it will eventually lead to permanent deformity in the child.

**2. Description of the Related Art**

[2] The prior art relates generally to conventional static orthosis support systems that are rigid and inflexible while limiting the motion and often restrictive and cumbersome to the patient, just as flexible orthotics do without the bio-mechanical design to move the patient and restrict unwanted motion. The present D-DAFO invention by contrast is a non restrictive dynamic ankle foot orthosis that allows freedom of motion while maintaining the correct alignment of the bones

of the foot and ankle to subtalar neutral position (STN) , or improved alignment for function , and restricts the patient from planter flexion and shortening of the heel cord.

[3] U. S. Patent No. 5, 897, 515 to Willner and Engdahl describes an ankle foot orthosis comprising a frame extending over the front of the lower leg and a supporting portion of rigid material extending over a narrow part of the front of the lower leg. U. S. Patent No. 5, 665, 059 to Klearman, Bronson, and Roth discloses a pivotally adjustable self-supporting ankle/foot orthosis for supporting a patient's ankle in neutral position and a brace extending between the foot section and the calf section for maintaining a relative angle in a fixed position.

[4] U. S. Patent No. 6,173, 511 to Perrault teaches an orthosis for footwear with positional self-adjustment formed of a semi-rigid resilient shell and is engaged inside a footwear to conformingly fit against the plantar portion of a person's foot, extending from the metatarsal region to the heel portion.

[5] U. S. Patent No. 4, 454, 871 to Mann and Hecker describes an ankle-foot orthosis positive mold including a pair of longitudinal ribs disposed alongside the lateral and medial surfaces of the lower half of the leg to below the ankle. The orthosis is adapted for securely maintaining the foot and leg of the wearer in a slightly less than 90 deg relationship to one another, the rigidity of the orthosis being enhanced by the longitudinal ribs formed therein.

[6] U. S. 6, 146, 349 No. to Rothschild and Fox teaches a natural foot orthosis and method of manufacturing the same. The invention describes a copolymer thermoplastic natural foot orthosis for supporting and controlling the

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